

a¹ a responder that receives said challenge and generates said response that is a function of said signal representation, wherein said function is defined by said challenge.

4. (Amended) A system, as in claim 1, where the acquired signal is one of the
5 following: a biometric signal, a fingerprint image, a face image, an iris image, an audio signal, and a speech signal.

a² 5. (Amended) A system, as in claim 1, where the acquisition device is one of the
10 following: a camera, a biometrics sensor, a semiconductor-based fingerprint sensor, a micro-mechanical sensor, and a microphone.

6. (Amended) A system, as in claim 1, where the responder has two or more selectable functions, the selectable functions being selected by one or more configuration inputs and the selectable functions modifying the challenge.

15 7. (Amended) A system, as in claim 6, where the configuration inputs are connected to an external source that selects the selectable function.

15. (Amended) A method for generating a response from an acquired signal and a
20 challenge, comprising the following steps:

creating a signal representation of said acquired signal;

receiving said challenge; and

a³ creating said response that is a function of the signal representation, wherein said
function is defined by said challenge.

25 16. (Amended) A computer product for generating a response from an acquired signal and a challenge that performs the following steps:

creating a signal representation of said acquired signal;

receiving said challenge; and
creating said response that is a function of the signal representation, wherein said function is defined by said challenge.

5 17. (Amended) A business process for authenticating an acquired signal, the process comprising the steps of:

creating a signal representation of said acquired signal;

creating a challenge;

10 creating a response that is a function of the signal representation, wherein said function is defined by said challenge; and

authenticating the signal representation by comparing the response to the function of the acquired signal.

18. (Amended) A business process, as in claim 17, where the acquired signal includes any
15 one of the following: a fingerprint, face, iris, and voice.

20. (New) A system for authenticating an acquired signal, comprising:

a challenge generator for generating a challenge; and

20 a verifier for authenticating a received signal by comparing a function of the acquired signal, wherein said function is defined by said challenge, to a response generated as a result of said challenge.

21. (New) A method for authenticating an acquired signal, comprising the following steps:

25 creating a challenge; and

authenticating a received signal by comparing a function of the acquired signal, wherein said function is defined by said challenge, to a response generated as a result of said challenge.

22. (New) A computer product for authenticating an acquired signal that performs the following steps:

creating a challenge; and

5 authenticating a received signal by comparing a function of the acquired signal, wherein said function is defined by said challenge, to a response generated as a result of said challenge.

23. (New) A system, as in claim 1, wherein said challenge identifies said function from
10 two or more functions.

24. (New) A system, as in claim 1, wherein said challenge identifies one or more
parameters of said function.

15 25. (New) The system, as in claim 1, wherein said signal representation can be verified by comparing said response to said function of the signal representation and the challenge.

26. (New) A business process, as in claim 15, wherein said challenge identifies said
function from two or more functions.

20 27. (New) A business process, as in claim 15, wherein said challenge identifies one or more parameters of said function.

28. (New) A method, as in claim 17, wherein said challenge identifies said function from
25 two or more functions.

29. (New) A method, as in claim 17, wherein said challenge identifies one or more
parameters of said function.

30. (New) A system, as in claim 20, wherein said challenge identifies said function from two or more functions.

5 31. (New) A system, as in claim 20, wherein said challenge identifies one or more parameters of said function.

32. (New) A method, as in claim 21, wherein said challenge identifies said function from two or more functions.

10 33. (New) A method, as in claim 21, wherein said challenge identifies one or more parameters of said function.

REMARKS

15 The present application was filed on April 12, 1999 with claims 1 – 19. The present amendment proposes to amend claims 1, 4, 5, 6, 7, and 15 – 18, cancel claims 2, 3, and 11 – 14, and add new claims 20 – 33. No new material has been added. After entering the present amendments, claims 1, 4 – 10 and 15 – 33 will be pending in the above-identified patent application.

20 In the Office Action, the Examiner rejected claims 1-19 under 35 USC §102(e) as being anticipated by Buffam (United States Patent Number 6,185,316).

The present invention is directed to an integrated signal sensor with processing power to augment a challenge from a server and to compute a response to guarantee that the sensed signal is live and not stored. The sensor-processor computes the response to the augmented challenge based on the signal characteristics of the sensed signal and then transmits both the signal and the response.

25 The host or the server can verify the response to authenticate liveness of the input image/signal and reject it if the response is different.